

AD-A040 514

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA
THE ADVOCACY OF A SYSTEMS CONTRACTING OFFICER FOR MAJOR WEAPON --ETC(U)
NOV 73 A D YOUNG

F/G 5/1

UNCLASSIFIED

NL

| OF |
AD
A040514



END

DATE
FILMED

7-77

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS
BEFORE COMPLETING FORM

1. REPORT NUMBER 6	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER 9
4. TITLE (and Subtitle) THE ADVOCACY OF A SYSTEMS CONTRACTING OFFICER FOR MAJOR WEAPON SYSTEMS ACQUISITION		5. TYPE OF REPORT & PERIOD COVERED Student Project Report, 73-2
7. AUTHOR(s) 10 ALVIN D. YOUNG 11 700 73		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS DEFENSE SYSTEMS MANAGEMENT COLLEGE FT. BELVOIR, VA 22060		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 12 54p.
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 1973-2
		13. NUMBER OF PAGES 55
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) UNLIMITED <div style="border: 1px solid black; padding: 5px; display: inline-block;">DISTRIBUTION STATEMENT A Approved for public release; Distribution Unlimited</div>		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) SEE ATTACHED SHEET		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) SEE ATTACHED SHEET		

ADA040514

DDC FILE COPY

STUDY TITLE: The Advocacy of a Systems Contracting Officer for Major Weapon Systems Acquisition

STUDY PROBLEM/QUESTION: Analysis of the inadequacy of current functions of the Procuring Contracting Officer and an introduction to the functions of the proposed Systems Contracting Officer

A The writer proposes

STUDY REPORT ABSTRACT:

AA concept of a Systems Contracting Officer (SCO) is proposed for the acquisition of major weapon systems rather than the concept of the present Procuring Contracting Officer (PCO). The historical role of the PCO in weapon system acquisition is reviewed from the 1700s to the present. The inadequacy of the PCO in weapon system acquisition is discussed and the concept of the SCO is presented as an alternate to reduce this inadequacy.

KEY WORDS: MATERIEL ACQUISITION WEAPON SYSTEMS PROCUREMENT PERSONNEL
SYSTEM MANAGERS PROJECT MANAGEMENT COST GROWTH

APPROVED FOR	
WCS	WFO Section <input checked="" type="checkbox"/>
DCM	WFO Section <input type="checkbox"/>
UNCLASSIFIED	<input type="checkbox"/>
JUSTIFICATION	
BY	
DISTRIBUTION/AVAILABILITY CODES	
DISC.	AVAIL. AND/OR SPECIAL
<i>AA</i>	

Student, Rank, Service
Alvin D. Young
Major USA

Class
PMC 73-2

Date
November 1973

DEFENSE SYSTEMS MANAGEMENT SCHOOL



Program Management Course Student Study Program

THE ADVOCACY OF A
SYSTEMS CONTRACTING OFFICER
FOR MAJOR WEAPON SYSTEMS ACQUISITIONS
STUDY REPORT
PMC 73-2

Alvin D. Young
Major USA

Fort Belvoir, Virginia 22060

THE ADVOCACY OF A
SYSTEMS CONTRACTING OFFICER
FOR MAJOR WEAPON SYSTEMS ACQUISITIONS

An Executive Summary
of a
Study Report
by

Alvin D. Young
Major USA

November 1973

Defense Systems Management School
Program Management Course
Class 73-2
Fort Belvoir, Virginia 22060

Contents

Executive Summary	ii
Introduction	1
Part I Historical Development of Weapon System Acquisition . .	4
Research and Development in Government Facilities . .	5
Transfer of Research and Development to Private Industry	7
Results of Participation by Private Industry	10
Summary	15
Part II Fragmentation of Procurement Process	17
Fragmentation of Responsibilities	18
Fragmentation of Authority	20
Effects of Fragmentation on the Procuring Contracting Officer	27
Summary	36
Part III System Contracting Officer Concept	39
General Description of System Contracting Officer Concept	40
Contractual Function	41
The Financial Function	43
The Personnel Function	44
Summary	46
Recommendations	47
Implementation	48
Bibliography	49

EXECUTIVE SUMMARY

The basic premise of this paper is that a misconception of the role of a Contracting Officer, in the procurement of new major weapon system, is one of the major reasons for huge cost growths experienced in the past. Although Department of Defense has taken many steps to insure continuity of major weapon design and technical performance, few relative steps have been taken to insure continuity of responsibility and authority of the contracting officer in major weapon system procurement.

The Department of Defense has decentralized much of its authority to the military departments, requiring only major decision to be made by DoD. DoD decides if a major weapon system program is to be initiated, whether it will proceed into full scale development, and whether it will proceed into production on a large scale. Programs are reviewed and recommendations are made by the Defense System Acquisition Review Council (DSARC), and the Deputy Secretary of Defense makes the decision.

It is submitted that a major portion of the cost growths occurs, not because of incompetence in technical knowledge or cost estimating procedures, but because our system of implementing key decisions depends on a contracting officer who performs in accordance with procedures in which responsibility and authority are not tailored to the acquisition of major weapon systems undergoing research and development. This contracting officer is presently called a Procuring Contracting Officer (PCO).

Now is the time to consider new alternatives for the contracting officer who procures new major weapon systems and this paper offers a new concept. The concept calls for a contracting officer who procures only major weapon systems that require research and development. This individual would be called a Systems Contracting Officer.

THE ADVOCACY OF A
SYSTEMS CONTRACTING OFFICER
FOR MAJOR WEAPON SYSTEMS ACQUISITIONS

STUDY REPORT

Presented to the Faculty
of the
Defense Systems Management School
in Partial Fulfillment of the
Program Management Course
Class 73-2

by
Alvin D. Young
Major USA

November 1973

INTRODUCTION

The purpose of this program is to introduce a concept of a contracting officer with responsibility and authority tailored to the acquisition of major weapon systems. The concept is applicable only to the acquisition of systems in the Concept, Validation and Full Scale Development Phases. A contracting officer who functions under this concept would be called a Systems Contracting Officer.

This paper was initiated as a response to the recent concern of government over the spiraling costs of major weapon systems.

This paper asserts that one of the major reasons for the spiraling cost of major weapon systems is the misconception of the role of the contracting officer in system acquisition and that an alternate concept should be offered for acceptance.

It is important to note here that it is not the intent of this paper to discuss such issues as "Should a program manager be a contracting officer?", or "Will conflicting relationship between the Program Manager (PM) and the Procuring Contracting Officer (PCO)

This study represents the views, conclusion and recommendations of the author and does not necessarily reflect the official opinion of the Defense Systems Management School nor the Department of Defense.

have negative effects on program management?" In fact, this paper maintains that regardless of who is the contracting officer or regardless of the effects of the relationship between the PM and the PCO, the present discontinuity of the responsibility and authority of the contracting officer would still be a major obstacle to efficient program management.

Various studies have been made about the responsibility and authority present in a System Project Office (SPO) and all have mentioned the diffusion of authority to some degree of both the program manager and the procuring contracting officer. For example, the Logistics Management Institute Report LM-1 Task 72-6, published in 1972, identified the problem of the multiple layers of authority that the program manager must deal with to obtain a decision; the Aerospace Industries Association Study, in a report to the Commission on Government Procurement, entitled "The Role of the Contracting Officer", identified the proliferation of contracting officer responsibilities without accompanying authority; a recent Defense Systems Management School study, PMC 73-2, entitled "Program Manager-Procuring Contracting Officer Relationship; How It Affects Program Management", revealed how some PMs and PCOs felt about their roles. All of these studies indicated that, although there were conflicts in responsibilities and authority, the competence of the people occupying the positions was sufficient to get a system developed, regardless of costs.

However, in today's cost conscious environment, a system must be developed within more stringent cost constraints, and the competence of

the people plus responsive organizational concepts are required to meet performance and cost objectives.

An organizational concept of a system contracting officer is presented here to provide the responsiveness required to meet performance and cost objectives.

PART I HISTORICAL DEVELOPMENT OF WEAPON SYSTEM ACQUISITION

Research and Development in Government Facilities

Transfer of Research and Development to Private Industry

Results of Participation by Private Industry

Summary

PART I HISTORICAL DEVELOPMENT OF WEAPON SYSTEM ACQUISITION

Research and Development in Government Facilities

Historically the government has always been able to buy materials from private industry that were already developed and competitive on the nation's market. However, as early as January 16, 1777, the government has been required to manufacture hardware that was peculiar to the military. In fact, due to the lack of interest by private industry, General Washington asserted that he would manufacture needed supplies himself and, on January 16, 1777, he ordered the erection of facilities for casting cannon at Yorktown, Pennsylvania. Based on this action the government continued to assume the responsibility for manufacture of military supplies for years. However this was an awesome burden and by 1779, Congress threw this burden on the states. This plan also proved to be a fiasco and it was also abolished, but by 1781 the executive power was centralized enough to assume this responsibility.

The first law regulating federal procurement was passed on May 8, 1792, which centralized purchasing authority for the Army at Department of the Treasury. This authority remained at that level until March 28, 1812 when Congress broadened the purchasing power of the Army.

In 1860 Congress enacted a law that required formal advertising for all purchases, except for matters of "public exigency".

Formal advertising requires the use of a firm fixed price contract and a contractor must have a pretty good price information to bid a fixed price for his product or service. Normally, when formal advertising is used, a product has already been developed, there are clearly defined specifications, and the cost to produce the product is well known prior to the contractor's submission of a fixed price. If formal advertising is used to buy items that have never been produced before, then no clearly defined specifications are available, and the contractor has no historical data to use as a base for price. In this case the price submitted could easily be inflated as much as 200 to 300 per cent to avoid loss. If the government decides to sign such a contract, the contractor bears the risk of delivering the product at a loss but government bears the greater risk of overpaying for the item. For these reasons, contracting with private industry by formal advertising, in a research and development environment, was not advantageous to the government, and research and development was done within the military departments for military hardware. Although formal advertising was not conducive to research and development, it was still required for all procurements until 1948. Under these conditions, private industry was mainly involved in quantity production procurements and the government developed systems for military application.

When World War I started, the executive branch avoided the 1860 law by establishing the War Industries Board by Executive Order 2868. This board was given control over war materials, finished products, priorities, labor and prices. Many procedures were relaxed or eliminated. The end of the war brought a return to formal advertising and standard peacetime procurement procedures and an end to the War Industries Board. Development of military hardware was still done within military agencies.

Transfer of Research and Development to Private Industry

The industry that caused the government to relax the requirement for formal advertising procedures was the aviation industry. Though World War I demonstrated the importance of the airplane, in the postwar years the aviation industry declined at such a rate that in 1923 an investigation committee predicted its disappearance if remedial actions were not taken. The decline was mainly caused by the small market for aircraft and the lack of a comprehensive federal policy to stimulate the industry's growth. However federal competition compounded the deplorable condition of the aviation industry. During the period 1920-1924, \$30 million was devoted to federal aviation research which maintained a federal aviation industry larger than the entire civil industry. While the government maintained a good research and development base, the production base was sagging due to the lack of aircraft procurements. Although the government had 1,592 operational airplanes in 1924, 40 per cent of these were so seriously handicapped that they were unsuitable for wartime emergency and the production base was unsuitable to fill the gap.

The Air Corps Act of 1926 was the major congressional attempt to stimulate the aviation industry. Although the government had returned to formal advertising after World War I, the aircraft industry had not yet achieved such a level of standardization so that it could follow the same procedures that governed the procurement of standard supplies. The act provided the keystone for new procurement policy for aircraft design as well as construction. The military departments were now authorized to make use of design competition in contracting for aircraft. Selection could be based on terms and conditions advantageous to the government rather than price. In addition, the act conferred new authority to contract for production in quantity where a design had reached the working model stage. Under prior law the military was unable to contract with the manufacturer who had developed the model. In fact, the military was required to write a specification on the model and advertise it to the entire industry for production bids. Although this act was an important stimulus for the private aviation industry, formal advertising, rather than negotiations, was still required to obtain the design.

On December 18, 1941, Congress enacted the First War Powers Act which authorized contracting without regard to law, which meant that there was contracting through negotiations during World War II. However, at the end of the war new legislation was drafted to re-introduce pre-war formal advertising, but to allow negotiations where advertising would be unrealistic.

In 1947 Congress enacted the Armed Services Procurement Act (ASPA). The primary emphasis was still on formal advertising, however, it allowed the government to negotiate under 17 exceptions. This was the last act passed by Congress that really determined how the government would obtain supplies and equipment from private industry. Other measures were passed by Congress to improve the implementation of the ASPA, such as the Truth in Negotiation Amendment, but the primary impetus of the procurement process comes from this act.

It is important to note here that, based on ASPA, the prevailing concept of a contracting officer was a person whose primary job was to procure supplies or services that were previously developed, normally called off-the-shelf items, while his secondary job may have been to occasionally procure a weapon system. Procurement of off-the-shelf items was expected to be accomplished through formal advertising and procurement of items that require research and development was to be accomplished by negotiations. Since the Department of Defense was established two years after the act was passed, the military departments procured their weapon systems without centralized guidance from the Executive Branch. In fact, after the Air Force was established in 1947, all three military departments had separate procurement regulations of their own. When DoD was established in 1949, the Office of Assistant Secretary of Defense, Supply Logistics had no assistant for procurement matters, and it was years later before a Deputy Assistant Secretary for Procurement was designated. Prior to 1950, research and development

was still mostly provided by the in-house government arsenals and quantity production of items was provided by private industry.

Results of Participation by Private Industry

Prior to 1950, DoD had not encountered Congressional pressures, technology advances and proliferation of complex organizations that were severe enough to cause it to concentrate its attention on particular weapons systems for management purposes.

It wasn't until the 1950-1960 time frame that DoD began to be confronted with these pressures. Congress became increasingly concerned with the lack of unity in procurement policies; technology in rocketry, solid state electronics, and aerospace experienced a quantum jump in sophistication and complexity; and new complex contractual and organizational relationships were emerging to accomplish the development of new military and aerospace systems.

Congress demonstrated its concern for unification of procurement policy in 1953 by enacting Section 638 of the Defense Appropriation Act of 1953 which prohibited officers and agencies of DoD from using funds for procurement, except under regulations issued by the Secretary of Defense. This action promoted the use of one Armed Services Procurement Regulation, (ASPR) rather than the separate regulation of each service.

The technological crisis also came to the fore in the 1950's. Reductions in defense research and development dating from the end of World War II came to a stop, and funds were poured into the development of missiles, high-performance aircraft, nuclear weapons and the space program. Cold war crisis attitudes, heightened by the Korean conflict and continued international uncertainties led to a recognition of the need for a permanently high level of military readiness and a broader technological base.

Thus the United States began to develop, for the first time in its history, a "permanent" defense industry. The "arsenal system", which had developed when the private enterprise turned away from military production, was no longer adequate, the free enterprise system was considered more efficient. The trend toward a permanent defense industry attracted a significant number of industries producing primarily for national defense. Some broad-based, commercially-oriented concerns created separate defense divisions.

In this environment the traditional free market system in which sellers could come and go was drastically changed. Because of the size of investments and the great technical and financial uncertainties, new marketing procedures were needed.

Along with these developments came increasing federal involvement in the performance of the work and in the review of the management systems used by contractors.

DoD realized that the shift of technical responsibility to private industry did not relieve it of its management responsibilities and it began to demand new information. This demand for more information has grown to the point that standardization of cost accounting procedures for defense contractors has been implemented.

Complex organizational relationships also began to develop in the 50's. While the government's needs for commercial products grew apace with its size, it was the development of procurement programs for military and aerospace systems which required new techniques and complex contractual and organizational arrangements on an unprecedented scale. Skills were blended in combinations which created new and perhaps unorthodox relationships between the government and private enterprise. The new organizational patterns were strange to many who were more comfortable with the earlier and clearer lines of demarcation.

Undoubtedly, these novel relationships influenced the growth of regulations and the demand for controls - management, fiscal, organizational, conflicts-of-interest, and others - in response to the huge potential for waste, mismanagement and inefficiency. The cost and possible self-defeating character of these pyramiding controls attracted only secondary interest at the time of their evolution.

This period witnessed a great outpouring of economic, political, and philosophical commentary on the weaknesses of the procurement process and the programs to which it was being applied. In many cases, complaints

about the system itself were closely tied to differences over the wisdom of the programs being supported.

In fact, certain problems suggested that neither the government nor private industry was best suited to perform certain functions. For example, inflexibilities in the Civil Service system constrained federal agencies from obtaining needed scientific and technical skills. Organizational conflicts of interest developed when contractors were used to write specifications for systems for which they would compete. These problems led federal agencies to sponsor the creation and financial support of various types of nonprofit organizations, neither purely federal nor purely private. Included were federally-owned or financed, privately operated centers for scientific or operations research; for strategic analysis; for systems analysis; for systems engineering evaluation, development, or integration; and for "think tank" studies of various types. One study concluded that while government should continue to rely heavily on private contracts, both public (in-house) and private research programs had their place, and their use should be based on relative efficiency, with management of research retained in federal hands.

Characteristically, these hybrid organizations are privately operated, sometimes university affiliated. They operate under agency-approved, flexible controls. Reconsideration of their proper role has been underway for some time by various agencies and congressional committees.

The proliferation of complex organizations, both in the government and private industry, was one of the reasons that the military departments established separate organizations of their own to procure major weapon systems.

It became evident to the military departments that in order to procure a major weapon system they would have to be able to deal effectively with congressional requirements, technological change and complex organizational relationships. It was thought that if a separate organization was created to procure each new weapon system, coordination of the various activities could be accomplished and the problems would be resolved. This new organization would be called a System Project Office (SPO), which would be controlled by a program manager.

While the SPO made significant contributions to the technical success of weapons systems in the 50's, such as closing the "missile gap", the management of weapon systems procurement during the period was less successful.

Some of the deficiencies were related to inadequate purchasing methods, information systems and cost controls, particularly on overhead and manpower costs. Cost estimating came under criticism because of severe underestimates. Whether the result of underestimates or of overexpenditures, increases in cost-over-original estimates involved huge sums of money.

The 1960's were characterized by efforts to centralize decision-making and solve management problems. One approach to improve motivation was to adopt policies which increase the contractor's risk and provide commensurate rewards through profit guidelines.

Incentive and fixed-price contracts were used to accomplish this. Because of the size and technical uncertainties in the new systems, the general consequences of this approach was substantial disillusionment, particularly with the concept of tying research and development to production and pricing them together ("total package procurement").

In the early 1970's, the pendulum has started to swing back to more federal risk assumption through cost-type contracting for development until prototypes and other proofs show the feasibility of committing for production. Under more recent DoD directives, concurrent development and production is to be avoided in favor of more "proving-out" time and contracts which postpone substantial production risks until technical and financial uncertainties are better resolved.*

Summary

This paper submits that the problems incurred by the SPO in procurement management is caused by a lack of continuity in the authority

*

All of the historical data in Part I is based on information contained in the Report of the Commission on Government Procurement, Appendix G, Historical Development of the Procurement Process.

and responsibilities of the System Program Office. This discontinuity is caused by the diffusing of authority of the contracting officer for a major weapon system. There are three main reasons for this diffusion. First, the diffusion was caused by the fragmentation of the procurement functions in order to provide better control. Second, the present regulations are tailored for the contracting officer who procures items off the shelf. Finally, a concept that provides continuity of responsibility and authority for the contracting officer who buys new major weapon systems has not been approved by DoD.

This paper offers a concept of a contracting officer whose responsibilities and authority are tailored for major weapon system acquisition. The contracting officer would be a Systems Contracting Officer rather than a Procuring Contracting Officer.

PART II FRAGMENTATION OF PROCUREMENT PROCESS

Fragmentation of Responsibilities

Fragmentation of Authority

Effects of Fragmentation on Procuring Contracting Officer

Summary

PART II FRAGMENTATION OF PROCUREMENT PROCESS

Fragmentation of Responsibilities

Fragmentation of the responsibility in the procurement process began to occur in 1949 when the General Services Administration (GSA) was established by the Federal Property and Administrative Services Act. GSA was established to control supply, public buildings, public records and property use and disposal (6:pp 173). The main affect of this action on weapon system acquisition was that GSA eventually was assigned the responsibility for procurement of all computer systems for the Government. Computer systems play a major role in weapon system acquisition, and there is a requirement to utilize GSA contracts for all procurements. Deviations from the GSA contract requires approval. The GSA approval plus other approvals in ASPR 3-1100 takes time, which in most cases costs money.

Further fragmentation of the procurement process was accomplished when certain procurement functions were removed from the military departments and centralized at DoD level.

The Defense Supply Agency (DSA) and the Defense Contract Audit Agency (DCAA) were two organizations established that focused attention on certain functions of the procurement process. DSA was assigned the responsibility of providing contract administration services for all

contracts awarded by DoD organizations. Within DSA, the Defense Contract Administration Service (DCAS) performs this function. DCAA was assigned the responsibility of providing audit services for DoD organizations.

The fragmentation of responsibility for certain procurement functions may not seem relevant to weapon system acquisition, however, whereas the Procuring Contracting Officer previously had to coordinate activities with one organization, fragmentation of responsibility caused a need for coordination with more activities. In fact, when DoD established several organizations to handle functions that were previously done by one organization, the contracting officer was required to expand his activities to deal with many organizations to obtain the same information that one organization provided previously. Regardless of the functions of the organization, when responsibility to carry out certain functions for a weapon system is diffused to the point where it takes too much time for the PCO to get an approval to take action, the effectiveness of the contracting officer is reduced.

Logically, fragmentation of the responsibilities of the Procuring Contracting Officer should be given now, but a search of ASPR and the procurement regulations of the Army, Air Force and Navy revealed that there was no consistency in responsibilities designated. The Army includes in its responsibilities a requirement for the contracting officer to safeguard the interests of the United States in contractual matters

(1:pp 1-402.50) The Air Force omitted the specification of contracting officer responsibilities. The Navy omits the designation of responsibilities of contracting officers too, but the responsibilities of the Assistant Secretary of the Navy (I&L) and the Chief of Naval Materiel are well defined (4: 1-451.2).

This is the first indication that continuity of responsibilities for the contracting officer that procures weapon systems is non-existent at DoD and military department levels. Apparently each procuring activity designates the responsibilities of the contracting officer in local regulations. This method of designating responsibility is fine for procurement of standard items but the contracting officer that procures major weapon systems deserves delineation of his responsibilities in ASPR to emphasize DoD expectations.

Fragmentation of Authority

The authority of the contracting officer is based on the position occupied in a procuring activity and the dollar limitation stated in his appointment warrant. Most authority, by virtue of position, is designated in ASPR, while some authority is designated by dollar amount. The regulations and documents of the various military departments identify the authority to be exercised by subordinate organizations when ASPR allows this delegation.

ASPR fragments authority by designating a certain level of organization to be a procuring activity and a certain title of an official to be the Head of a Procuring Activity (HPA). For example, the Directorate of Requirements and Procurement, Headquarters, U.S. Army Materiel Command, is designated as a procuring activity for the Army; for the Navy a designated procuring activity is the Military Sealift Command; and for the Air Force, the Air Force Logistics Command is designated a procuring activity (1: 1-201.14).

The commander or chief of each activity would be HPA. ASPR then designates certain procurement functions to the HPA. The military departments then designate and select contracting officers.

ASPR also fragments authority by requiring determinations and findings by the Service Secretary for certain procurements. These determinations and findings are required to justify the use of negotiations, rather than formal advertising, for procurement (1: 3-302). In some cases a procuring contracting officer who signs contracts for millions of dollars must go to the service secretary level to obtain approval to negotiate a research and development contract above \$100,000.

The military services further fragment authority by delegating authority to perform certain functions to lower levels of organization. For example, the Secretary of the Air Force delegated the authority to enter into, execute and approve contracts to the Director of Procurement

Policy, who, in turn, delegated the authority to the Air Force Major Commands (2: 1-452). The Navy's contracting authority is fragmented by requiring a business clearance to be approved before award of contracts valued over \$100,000 (3: 1-403.50). While it is understandable that this method of delegating authority in the procurement process provides necessary control to responsible organization, there is no mention of the authority of the office that procures major weapon systems.

The authority given a contractor by dollar limitation is also highly fragmented among the military departments. Normally the contracting officer occupying the highest position will have the greatest dollar authority and contracting officers in lower positions have lesser dollar authority.

This method of assigning authority is suitable for procurement of a vast amount of unrelated items, but in the procurement of major weapon systems another method of assigning authority could provide more continuity. This method will be discussed in Part III.

The final erosion of authority occurs through the use of a variety of advisors under a concept called the Procurement Team. The use of the Procurement Team does not transfer authority from the contracting officer to team members, however, it restricts his use of his authority when he cannot justify a decision that disregards advice from certain members of the team. The function of the team is given below:

One of the most pertinent descriptions is set forth in the
Armed Services Procurement Manual for Contract Pricing:

"In the typical situation we have several individuals looking at a contractor's proposal (or a company's offer), each from the vantage point of his own special area -- accounting, engineering, production, purchasing, estimating -- and each reporting what he sees. Like the blind men and the elephant, no one sees the whole animal but each one has some conclusion, based on his examination of his own set of facts, as to the nature of the beast. Someone has to take these separate observations and put them together along with any other information having a bearing on the procurement, and make a decision about the price proposed. This someone is the contracting officer, or someone working in his name." (Emphasis added) (5: 6)

There should be no quarrel with the concept of a procurement team which includes advisors with relevant administrative, technical and professional experience. Nor should there be a quarrel with having on the procurement team individuals interested in various aspects of the contract output including technical data, engineering design and product specifications. It would seem appropriate, however, that there be a manager or director of the team, and not simply an indeterminate someone who collates or otherwise puts together advice and recommendations.

The absence of a designated manager or director is serious enough, but in recent years one of the procurement team advisors (i.e., the auditor) has so increased in stature and prestige that his reports and recommendations often are not considered as advisory but as directions that the contracting officer can neither ignore nor contravene (5: 9).

The reason the contracting officer and the auditor had conflicts was due to the vagueness of both of their authority.

On April 10, 1964, the Secretary of Defense issued a memorandum delineating the responsibilities of contracting officers and auditors. This memorandum required contracting officers to request audits in cases of contractor proposals in excess of \$250,000. It also provided that

"Where the contracting officer fails to accept an audit recommendation and the auditor feels . . . that there is an opportunity for useful corrective action, the auditor shall report such a situation to his superiors."

Thus this memorandum officially placed the contracting officer in the position of having to be prepared to defend his actions whenever he chose not to accept an audit recommendation. The Aerospace Industries Association, the Electronic Industries Association, and the National Security Industrial Association wrote to the Secretary on September 11, 1964 pointing out the adverse affect that could follow this dilution of the contracting officer's authority.

In August 1965, Defense Procurement Circular 34 was issued to clarify in detail the role of the audit function in procurement. In this circular the contracting officer was instructed to avail himself of the services of specialists - requesting advice, evaluating their counsel, and coordinating their efforts without transferring any of his responsibilities to the specialists.

Among the specialists referred to were those in the fields of contracting, finance, law, contract audit, packaging, engineering, traffic management and price analysis. Because there had been reported instances of duplication of work among contract auditors and price analysts the circular attempted to clarify the respective roles (5:11).

The April 10, 1964 Memorandum should have been voided by the new circular. However this was not the case.

The circular was silent as to the auditor reporting to his superiors instances of the contracting officer's failure to follow the auditor's recommendations. Officially, then, this provision of the Secretary's memorandum of April 10, 1964, still has full force and effect.

The extremes of the reaction and the undesirable results which followed from the 1964 memorandum have recently been recognized by the Defense Department. By memorandum of 8 October 1970, Secretary Packard clarified the role of the Defense Contract Auditor as an advisor and stated:

"We should avoid actions by auditors in their advisory capacity which appear to dispute or question specific decisions of contracting officers."

However, there has been no basic change in the management practices under which the auditor, who has no decision authority, may submit advice

without limitation; while the contracting officer, who has decision responsibility, must justify any failure to follow that advice. Neither has there been any change in procurement management philosophy under which the auditor is presumed right and the contracting officer presumed wrong as soon as some contract price or cost negotiation deficiency is alleged.

The history of problems in relationships between contracting officers and auditors has been so well established that the Department of Defense requested the Logistics Management Institute (LMI) to undertake a study of these relationships. In March 1969 LMI issued its report entitled "The Contract Audit/Contract Administration Interface". The study found lack of team effort, duplication of effort, organizational competition, and fuzzy definition of the respective roles of the field ACO, price analyst and the DCAA contract auditor.

The principal LMI recommendation was to combine the Defense Contract Audit Agency with the Defense Contract Administration Services of the Defense Supply Agency in order to eliminate the difficulties caused by the present organization in which the DCAA is completely separate and independent.

Because of this separation and independence the contract auditor does not identify himself with any particular procurement mission and yet he is an important part of the procurement process. As a result the contract

auditor may recommend that costs be disallowed or may question all sorts of costs without responsibility for the results of his action. Moreover, the auditor seldom is required to defend his position. This lack of responsibility can contribute to a degree of irresponsibility in auditor's decisions as to costs disallowed or questioned.

The contracting officer is under pressure to agree with the auditor unless he can justify doing otherwise. For this reason he often chooses to delay decisions hoping that the contractor and the auditor will be able to resolve outstanding issues. The auditor, on the other hand, has been designated as an advisor and considers he has neither authority nor responsibility to negotiate with the contractor. The result is that the contractor has difficulty finding some single individual who will negotiate substantively. His search is made more difficult because a price analyst or price analysis group also may be involved (5: 12).

Effects of Fragmentation on the Procuring Contracting Officer

The effects of fragmentation on the effectiveness of the contracting officer can now be discussed. The contracting officer's functions, under present procedures, are grouped in four categories for analysis. The categories are:

- Determining the Method of Procurement
- Selecting the Source
- Negotiating the Contract
- Administering the Contract

Determining the Method of Procurement.

The Armed Services Procurement Act of 1947 established 17 exceptions to formal advertising. The Act provided that the exceptions for classified work, standardization and interchangeability, substantial investment, advertised purchase not reasonable and National Defense Mobilization could not be delegated by the agency head. The Act also limited the delegation that might be made in the case of experimental, development or research contracts (5: 3).

The intent of this act can be recognized by the statements from the Committee Report (Public Law 413) which recommended passage of the act:

"To this it should be added that it (the bill) places the Government's contracting officers in a position to secure better prices and products through broadened authority in certain specified instances." (Emphasis added)

"However, the committee also recognized that during the time this (existing) legislation has been in effect a substantial number of strict administrative interpretations have been made, out of which has grown the present traditional approach that government contracts must be awarded on a lowest price basis, irrespective of the best public interest or of lower ultimate cost."

"Under present circumstances buying for the armed services is definitely a large scale business and should be conducted accordingly. The committee is convinced that there are a number of situations in which the exercise of judgment by the purchasing officer should not merely be permitted but should be encouraged." (Emphasis added)

In passing the law, the Congress wished that the several services would operate on as uniform base as possible. This preference led to developing the Armed Services Procurement Regulation (ASPR).

The ASPR prescribed that the number of transactions, and their dollar values, under formal advertising and under negotiation be reported. Today most often negotiation is identified with the largest amount of dollars and there is a continued cry for more advertising -- whether it was the original intent of the Congress or not, and whether it makes good sense or not. Too often "negotiation" is used synonymously with "sole source" procurement even though competitive negotiation (whether based on price, quality, schedule, etc.) often is characterized by more intense competition than is advertised procurement.

Once dollars were made the focus of procurement attention, the delegations of authority were based on dollar amounts. Thus began the restriction (contrary to the Congressional intent) of the contracting officer's power.

However, the ASPR were written to place restrictions around the use of those exceptions that could be delegated. The exception for public interest during a national emergency has been limited to small business and labor surplus set-asides. A larger number of restrictions were established as to the use of the exception where it is impractical to obtain competition.

These restrictions all are crowned by ASPR 1-108 -- (Departmental Procurement Instructions and ASPR Implementations). The effect of this Section of the ASPR is to bind contracting officers in such a way that they can't exercise any initiative. In addition, the regulations of the military services and procurement agencies call for successive reviews of contracts by Supervisors, Division Chiefs, Directors, Procurement Committees, the several staffs at the Pentagon, the General Counsels, the Deputy Assistant Secretaries and Secretaries.

As a result there has been developed a system of procurement under which no person is responsible for his acts; where there is indeterminate delay, and where the contracting officer, who the Congress intended to have broad powers of discretion, has become a coordinator and signer of documents.

Those who believe that the Congress intended the contracting officer to have broad powers believe it was the Congressional intent to make the contracting officer so strong that only in the case of abuse of his authority, fraud or gross negligence would his decisions be set aside.

The significance of this history is the relationship of the law to the kind of procurement system that has developed. The law established advertising as the method of procurement with exceptions to permit negotiation. The resulting procurement system surrounded the exceptions with so many restrictions that there is actually very limited

delegation of authority. Not only are contracting officers restricted in exercising authority, but the management system itself is poor and inefficient because of all but the most trivial contract actions are surrounded with elaborate controls and reviews. The Department of Defense could exercise and still delegate administratively much more authority and still be within the law and intent of Congress.

Any change to increase the authority of the contracting officer in determining the method of procurement cannot be accomplished without either a change in the law or radical and significant change in agency procurement administration, management and review functions.

Selecting the Source.

The ASPR requires that procurement through negotiations shall be after solicitation from the maximum number of qualified sources, consistent with the nature and quantity of supplies and services to be procured. Award is to be made to that supplier whose offer is to the best advantage of the government -- price and other factors considered. There also is a listing of some of the factors to be considered. There is very little in the ASPR concerning procedures for and responsibility for actually determining the selected source. This coverage quite properly is left to the various military services and buying agencies.

The NASA and Air Force source selection procedures are probably typical of those issued by buying agencies. If so, the contracting

officer is relegated to important but not decision-making functions. He is furnished the source list, he issues the Requests for Proposals from materials provided him, and, at the end of the negotiating process, he signs the contracts (5:3-50).

There is a new draft Department of Defense Directive 4105.62 entitled "Selection of Contractual Sources for Major Defense Systems" but it does not mention a word about the role of the contracting officer. According to this directive, the most the contracting officer can influence a source selection is by writing the source selection plan and negotiating the contract.

Negotiating the Contract

In developing the contract terms and conditions the contracting officer has a variety of aids, each of which in some measure frees him from the exercise of judgment. The ASPR provides standardized clauses in both mandatory and optional groupings and a long detailed listing and description of what the contracting officer must do and how these duties must be performed. He also has available a variety of advisors which together constitute what is generally known as the "Procurement Team" (5:6). The functions of this team have been described before including the relationship between the contracting officer and the auditor. This relationship is further complicated by the functions of the price analyst whose duties often overlap those of the auditor and who functions as the pricing advisor to the contracting officer.

The increasing importance of the auditor and the price analyst's functions in contract negotiation is in some degree based on reaction to the Congress. In the early 1950's Congressional Committees interested in defense procurement turned more of their attention to contract costing and pricing practices. The General Accounting Office issued a number of reports which alleged deficiencies in the treatment accorded individual elements of cost or other data relevant to the price analysis and negotiation process. These reports often attributed these deficiencies to the failure of contracting officers to request, obtain and use audit reports.

Supervisory and staff procurement officials usually reacted to the criticism by placing the blame on contracting officers, even when the actions of these individuals were consistent with the procurement policies and practices in existence at the time the alleged deficiencies occurred. There was a failure to recognize that the contracting officer's responsibility was to negotiate a total price. Even though he performed that function well, he could later (as much as five years or more after the contract was negotiated) be criticized for some defect in the handling of cost data.

In this environment today, contracting officers no longer conduct negotiations so as to arrive at a mutually acceptable reasonable price by the most appropriate methods of price analysis and with a judicious

expenditure of time and effort. Instead, the contracting officer has been motivated to accomplish the process by those means most likely to protect him from subsequent criticism. The result is voluminous and expensive cost data and prolonged negotiations involving numerous people in both government and industry in attempts to get the lowest possible price using competitive pressure, detailed cost analysis and audit reports.

In the effort to adequately document each phase, the contracting officer often finds himself unable to satisfy some audit or other advisory recommendation and yet reach a satisfactory agreement with the contractor. The result is a stalemate in which the contracting officer is reluctant to make a decision and the contractor is unable to determine with whom he should negotiate.

As long as procurement management continues to assume its decision-makers are wrong and the advisors and auditors are right there is unlikely to be any change in the present reluctance of contracting officers to exercise authority in the negotiation process. A similar situation exists with respect to contracting officer functions in the contract administration process.

Administering the Contract.

Once a contract has been awarded, the work of administering the contract starts. The Procuring Contracting Officer (PCO) is responsible

for contract administration, but he frequently delegates some part of authority to an Administrative Contracting Officer (ACO).

With respect to decision-making the ACO usually matches the PCO in his reluctance to exercise authority and in his search for the solution that promises the least likelihood of subsequent criticism. The ACO also receives audit reports and prefers to accept and follow auditor recommendations, rather than to act otherwise even in those instances where his judgment would lead to another course of action.

In the case of very large programs, however, the PCO usually does not delegate the authority to make important decisions, such as approving substantive contract changes. In this area of contract administration of large programs another significant procurement development that inhibits and dilutes the authority of the contracting officer has been the growth in the size and authority of "systems project" organizations headed by "program managers". These organizations provide the direction and staff believed to be necessary to assure program success. The staff usually includes a designated "contracting officer" who may be as much as three levels of authority removed from the "program manager".

Under these circumstances it seems clear that the contracting officer cannot perform the functions inherent in the warrant of authority he is given. If he attempts to do so, he often will be accused of thwarting the success of the program and interfering with the accomplishment of program objectives.

These comments must not be interpreted as indicating any quarrel with the current DoD program to improve program management and to give the program manager the authority needed to insure program success (5: 7-8).

The Aerospace Industry Association and the Blue Ribbon Panel Report recommended that the program manager should have direct authority over the contracting officer. This study also agrees with this position with the exception that ASPR should provide a requirement for all directed changes to a contract from the program manager or others be stated in writing and made a part of the contract file.

Even when program managers or systems project organizations are not involved, the contracting officer should not be subject to direction in matters of his contracts. He should be permitted to act authoritatively so long as he does not abuse his discretion. He also should be held accountable to explain or defend his actions. Certainly he should not be placed under organizational type pressure to accept and adopt, without exercise of judgment, the input received from the various technical, professional and staff groups concerned with contractor performance (5: 9).

Summary

The effects of fragmentation of the contracting officer's authority is (1) delay in decision making; (2) loss of continuity in decision making; and (3) loss of initiative in the Procuring Contracting Officer.

Decisions are delayed because of the time required for approvals to travel through the many layers of authority above the procuring contracting officer. Continuity of decision for a particular weapon system is lost because the advice of various groups of advisors and professional people is based on procedures that are not applicable to weapon system acquisition. Thus decisions are made that are in accordance with procedures that are not appropriate for the situation or the new weapon system. The initiative of the PCO is lost because present procedures are so structured that only routine adherence will guarantee no criticism. However, in addition to a broad knowledge of procurement procedures, a vivid imagination is required in order to save dollars on contractual matters. The contracting officer must use his imagination to visualize the results of certain courses of action. Once these results are visualized, initiative must be exercised to take the appropriate course of action although this course of action may not be visualized by advisors or other professional people. If this initiative is subjected to multiple layers of approval and various advisors, time is lost trying to obtain approvals and consensus. Delays in decisions normally equate to growth in costs.

In the procurement of new weapon systems within certain dollar constraints little historical data is available and imagination is paramount for the exercise of good judgment.

The one person in the best position to exercise this imagination is the contracting officer; however, he is excessively restrained through procedures inappropriate for the job at hand.

Simply stated, the person who has the responsibility to exercise imagination in weapon system acquisition, the Program Manager, normally does not have the authority designated in present procedures. The person who has the authority to exercise imagination, the Procuring Contracting Officer, normally does not have the responsibility designated in present procedures. Based on this premise, a concept that aligns authority with responsibility is offered in this study.

PART III SYSTEM CONTRACTING OFFICER CONCEPT

General Description of System Contracting Officer Concept

Contractual Function

Financial Function

Personnel Function

Organizational Function

Summary

Recommendation

Implementation

PART III SYSTEM CONTRACTING OFFICER CONCEPT

General Description of System Contracting Officer Concept

The Systems Contracting Officer concept is tailored to provide continuity of responsibility and authority to the contracting officer who procures new major weapon systems for the purpose of achieving acceptable technical performance within dollar limitations. The concept is designed to be effective in the Concept Phase, the Validation Phase, and the Full Scale Development Phase of a major weapon system. The responsibility and authority described in the concept are to be terminated when the first firm fixed price contract for a new major weapon system is awarded. When a firm fixed price contract is signed, the responsibility and authority of the Procuring Contracting Officer would be adequate for the procurement. The responsibility and authority of the SCO are not applicable to formal advertisement procurements.

The concept is based on the assumption that the program manager decides what level of technical performance is to be procured and the Systems Contracting Officer (SCO) implements this decision through contractual arrangements.

Implementation of these decisions requires the Systems Contracting Officer have certain responsibilities and accompanying

authority to obtain acceptable performance at reasonable costs. There are certain procurement functions that should have responsibility and authority clearly defined for the SCO. These functions are the Contractual Function, the Financial Function, the Personnel Function and the Organizational Function.

The Contractual Function.

The contractual function has responsibility and authority tailored to the procurement of systems requiring research and development. The SCO would be responsible for procuring a total system or subsystem identified in the work breakdown structure. There is a difference between the SCO and the PCO responsibility in that the PCO is presently responsible for procuring research and development for certain items peculiar to this office, regardless of work breakdown structure. He can award any contract for any item assigned as long as dollar limits stated on his contracting officer warrant are not exceeded. If the value of a contract exceeds his authority, the contract will have to be signed by a contracting officer with higher dollar limitations. The SCO would be responsible for procuring research and development of certain items also, but his responsibility would be tailored to the work breakdown structure of a system for continuity. The SCO would have the responsibility for procurement of all items or some of the items on the work breakdown structure regardless of dollar limitation. If the item is to be procured a SCO would be responsible for all procurements, regardless of dollar amount per contract.

The SCO would be responsible for negotiation of all contracts related to his assigned work breakdown structure.

The SCO would also be solely responsible for determining adequacy of cost and pricing data for research and development contracts. The audit input is valuable for factual information but the judgment of the Systems Contracting Officer, for future contractual activity, should not be restricted by audit recommendations. The main reason is that the contracting officer is held responsible for the results, not the auditor. Another reason is that once the Contracting Officer has reviewed the information provided by the auditor, an estimate of specific amounts for future actions must still be determined, and the System Contracting Officer's estimate is more likely to be realistic because he will be held responsible for the results.

Contractual authority would be tailored to the work breakdown structure. Presently, the PCO's authority is limited by dollar amount regardless of work breakdown structure whereas the authority of the SCO would be tailored to be limited by the dollars approved in the budget for items in the work breakdown structure. For example, if research and development costs for Missile System Q, with Subsystems A, B and C, had been approved for one billion dollars over a three-year period, and Contractor X was to provide all subsystems, one SCO could be responsible for procuring the total system by its work breakdown structure. The SCO's authority would be

limited by the dollars approved in the annual appropriation, apportionment and subsequent allocations for the system, rather than certain dollar amounts per contract. The decision to expend a certain amount of funds from the allocation would be made by the SCO. However, if Contractors Y and Z were to provide Subsystems B and C respectively to Contractor X for integration, the SCO responsible for the total system would have the option of delegating authority to two additional SCO's to procure the subsystems. In this case the authority of the SCO's procuring the subsystems would be limited by the dollars annually approved for expenditure for their subsystems. The decision to expend the funds would be theirs.

The SCO would also have the authority to make judgmental decisions on cost estimates without justifying deviations from audit recommendations for research and development contracts. The SCO would have authority to negotiate any contract for work pertaining to the work breakdown structure, therefore not requiring a determination and finding to negotiate. However, sole source procurements would be reviewed and approved as presently required by ASPR.

The Financial Function.

The financial function is tailored to provide the SCO the responsibility and authority to gain the initiative for the purpose of attaining cost savings. The SCO would be responsible for budgeting, commitments, as well as obligations for all procurements of items on the work breakdown structure.

Although technical requirements would continue to originate in technical offices, the budgeting process for funds would be accomplished by the SCO. This responsibility would give the SCO motivation to be responsive to cost saving opportunities. This function also includes the responsibility to budget for cost growths when contractors have problems.

Financial authority would allow the SCO to budget for, commit and obligate funds for work breakdown structure requirements originated by technical offices approved by the program manager. With this authority, when the program manager approves a requirement, it would be clear that the SCO will be expected to procure the requirement within the approved budget.

The Personnel Function.

The personnel function has responsibility and authority tailored to allow the SCO to provide job enrichment for personnel working on research and development contracts.

The SCO would be responsible for obtaining quality personnel and providing job motivation for excellent performance through job enrichment actions. The establishment of performance parameters and recognition for achievement for personnel who make a substantial contribution on research and development contracts would be a responsibility of the SCO. In addition to procurement personnel, personnel would include others who

are designated in contractual documents, such as technical directors and Contracting Officer Representatives.

Personnel authority to provide personnel motivation would make individual actions more responsive to SCO requirements. Personnel designated in contractual documents as spokesmen for the SCO would be rated by the SCO and endorsed by the SCO rater. Personnel designated as spokesmen for the SCO would be responsible for no other activity with an equal or higher priority. The difference between this approach and present procedures is that on a PCO contract personnel who are designated to work on the contract are rated by the local supervisor and the local supervisor determines the priority of the work to be performed; whereas on an SCO contract personnel are rated by the SCO and, although other work can be assigned by the local supervisor, the top priority would be the SCO contract. Under present procedures, when a person is assigned to work on a PCO contract, other work assigned to the individual by the local supervisor may pose a conflict in scheduling, which can only be resolved by the commander who commands both the PCO and the local supervisor. Such a resolution could take too much time and by the time the conflict is resolved, achievement of a major milestone could have been sacrificed .

The Organizational Function.

The organizational function is tailored to give the SCO the responsibility and authority to designate a field organization, to accomplish his

work when present resources, both personnel and facilities, are not adequate to accomplish the job.

The SCO would be responsible for providing personnel and facilities when existing personnel resources and facilities are inadequate for the task.

The authority required to exercise this responsibility would be for the SCO to be allowed to budget for a contingent field organization that could be manned only if existing personnel resources and facilities are inadequate.

Summary

The present concept of a procuring contracting officer causes three major problems that cause significant cost growths. The systems contracting officer concept can eliminate these problems and cause significant cost savings. The three major problems caused by the PCO concept are (1) delayed decisions; (2) discontinuity in decisions; and (3) loss of initiative by the procuring contracting officer.

The systems contracting officer could minimize delayed decisions because all people designated to work on the contract would be working for the SCO and could be motivated to take action before a crisis occurs. Discontinuity in decisions would be minimized because personnel would have responsibilities tailored to the work breakdown structure and they

○ would be responsible for insuring continuity of their actions to the system contracting officer. Additionally, they could be rewarded for doing a good job. The initiative of the systems contracting officer would be maintained because personnel trained to provide the right information would be working for the SCO and he would have the responsibility for taking the initiative once such information became available. Previously, without the responsibility, authority, and timely information, the contracting officer has had no basis for taking the initiative to eliminate problem areas.

Recommendations

Based on the foregoing, it is recommended that the system contracting officer concept be forwarded to the offices listed below for review and acceptance as a point of departure to change the present procedures for the contracting officer who procures new major weapon systems.

It is further recommended that, as a minimum, a new section of ASPR should be devoted entirely to the acquisition of major weapon systems.

The offices recommended to review this paper are listed below:

Deputy Secretary of Defense
ASD (I&L)
DDR&E
ASD (C)
DDPA&E
ASPR Committee

Implementation

The minimum requirements to implement the Systems Contracting Officer concept would be to:

- (1) Revise ASPR to add a section to outline contracting officer procedures for procurement of research and development for major weapon systems.
- (2) Establish a school for the training of Systems Contracting Officers.
- (3) Establish a career program for Systems Contracting Officers, both military and civilian, to attract young personnel.

BIBLIOGRAPHY

1. Armed Services Procurement Regulation. 1973 Edition.
2. Army Procurement Procedures. 1969 Edition.
3. Air Force Supplement to ASPER. 1969 Edition.
4. Navy Procurement Directive. 1966 Edition.
5. Aerospace Industries Association. Rule of the Contracting Officer. July 1971.
6. Report of the Commission and Government Procurement.
Historical Development of the Procurement Process.
December 1972.